

## **REMARKS**

Reexamination and reconsideration is respectfully requested in view of the above amendments and the following remarks.

**1. Status of the Claims**

Claims 1-36 are pending. Claims 1-36 stand rejected.

**2. Support for the Amendments**

Amendments to the specification are made to bring the application into compliance with formal requirements, particularly those noted in MPEP § 608.01(a) relating to arrangement of the specification. Amendment of the text at page 18 is to correct a typographical error in the original text. The amendments do not enter new matter into the specification and are made solely to expedite prosecution.

Support for the amendments to the claims is found throughout the specification as filed. For example, support for “reducing” muscular fatigue is found at least at page 1, line 9, and page 18, line 4, of the specification. Support for an “effective amount” recited in claim 13 is found, among other places, in originally filed claim 15 and in the specification at page 12, line 29 to page 13, line 2, and page 13, lines 12-24. Support for new claims 25 and 26 is found, for example, at page 17, lines 11-20. The amendments are made without disclaimer or prejudice to claiming any disclosed subject matter in a continuing application.

**3. Information Disclosure Statements**

Acknowledgement of the Information Disclosure Statement filed February 16, 2007, is noted with appreciation. Applicants file herewith an Information Disclosure Statement listing JP Hei-11-318402 A, cited on May 11, 2007, in the corresponding Chinese application. Applicants request acknowledgement with the Office’s next reply.

**4. Acknowledgement of Certified Priority Documents**

Acknowledgement of receipt of the certified priority documents is noted with appreciation.

**5. Rejection Under 35 U.S.C. § 112, Second Paragraph**

Claims 2-6, 8, 11, 12, 14-18, 20, 23, 24, and 25-36 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. Specifically, the Office alleges that it is unclear how fatigue can be both prevented and improved or how fatigue can be both improved and treated. The language at issue does not appear in the presently amended claims, rendering the rejection moot.

Claims 25-26 are rejected under 35 U.S.C. § 112, second paragraph, under separate grounds. The rejection of claims 25-36 is mooted by the cancellation of the claims at issue.

**6. Rejection Under 35 U.S.C. § 101**

Claims 25-36 are rejected under 35 U.S.C. § 101. The rejection is moot in view of the cancellation of the claims at issue.

**7. Rejection Under 35 U.S.C. 102(b)**

Claims 1-13, 19, 21, and 22 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,372,266 (Suzuki). Applicants traverse the rejection as it applies to the amended claims.

The rejection is not applied to claim 15, which depends from claim 13. The present amendment incorporates the limitations of claim 15 into claim 13. The rejection of claim 13 and claims depending from claim 13 accordingly may be withdrawn.

**8. Rejection Under 35 U.S.C. § 103(a)**

Claims 14-18, 20, 23, and 24 are rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Suzuki. Applicants traverse with respect to the amended claims.

The Office characterizes Suzuki as teaching the use of proanthocyanidin to treat leg cramps and chronic fatigue syndrome (CFS). Office Action, page 8. Contrary to the Office's allegation, however, leg cramps and CFS are not examples of muscular fatigue, as evidenced by the following definitions of leg cramps, CFS and muscular fatigue available around the time of the invention. Definitions of leg cramps, CFS, and muscular fatigue are excerpted below. Full citations from the various sources are provided in **Exhibit 1**.

**Cramp/ Nocturnal Leg Cramps**

Cramps are unpleasant, often painful sensations caused by contraction or over shortening, usually of muscles.

Nocturnal leg cramps are involuntary muscle contractions that occur in the calves, soles of the feet or other muscles in the body during the night or (less commonly) while resting.

See Wikipedia, at [http://en.wikipedia.org/wiki/Cramp#Nocturnal\\_Leg\\_Cramps](http://en.wikipedia.org/wiki/Cramp#Nocturnal_Leg_Cramps).

### **Cramp**

Painful uncontrollable contraction of a muscle or group of muscles.

See The Columbia Encyclopedia, Sixth Edition, Copyright © 2006, Columbia University Press, *available at* <http://education.yahoo.com/reference/encyclopedia/entry/cramp;ylt=AqTMSrlxIxr9MWUx9KMCAgVSt8wF>.

### **Chronic fatigue syndrome (CFS)**

Chronic Fatigue Syndrome is one of several names given to a poorly understood, highly debilitating disorder of uncertain cause. The disorder is marked by severe, chronic mental and physical exhaustion and by other specific symptoms, arising in previously healthy and active persons. CFS is not the same as “chronic fatigue”—while fatigue as a symptom is very common, CFS itself is relatively rare by comparison.

See Wikipedia, at [http://en.wikipedia-orq/wiki/Chronic\\_fatigue\\_syndrome](http://en.wikipedia-orq/wiki/Chronic_fatigue_syndrome).

Chronic fatigue syndrome (CFS), collection of persistent, debilitating symptoms, the most notable of which is severe, lasting fatigue. As currently defined, chronic fatigue syndrome is the presence of severe, disabling fatigue lasting for six or more consecutive months. The fatigue is persistent or relapsing, and is new (i.e., not lifelong), not relieved by rest, not the result of ongoing exertion, and interferes with normal work, social, educational, or personal activities.

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Chronic fatigue syndrome, CFS, CFID: A group of symptoms, of unknown cause, characterized by unexplained fatigue, weakness, muscle pain, feeling poorly, trouble thinking, and sometimes, fever and/or lymph node swelling.

See Internet at [http://web.archive.org/web/20030429150950/http://www.gulflink.osd.mil/medsearch/glossary/glossary\\_c.shtml](http://web.archive.org/web/20030429150950/http://www.gulflink.osd.mil/medsearch/glossary/glossary_c.shtml) (posted April 29, 2003).

Chronic Fatigue Syndrome: An illness without a known cause that is characterized by long-term exhaustion, muscle weakness, depression, and sleep disturbance. It is often associated with Fibromyalgia and Myofascial Pain Syndrome. It is often precipitated by physical, viral or psychosocial injury or stress.

See Internet at [http://web.archive.org/web/20030728041710/http://www.blatmanpainclinic.com/blat\\_glossary.htm](http://web.archive.org/web/20030728041710/http://www.blatmanpainclinic.com/blat_glossary.htm) (posted July 28, 2003).

On the other hand, muscular fatigue is defined as follows:

### **Physical Fatigue**

Physical fatigue or muscle weakness (or “lack of strength”) is a direct term for the inability to exert force with ones muscles to the degree that would be expected given the individual’s general physical fitness.

See Wikipedia, at [http://en.wikipedia.org/wiki/Fatigue\\_%28medical%29#Physical\\_fatigue](http://en.wikipedia.org/wiki/Fatigue_%28medical%29#Physical_fatigue).

### **Fatigue, in physiology**

In physiology, inability to perform reasonable and necessary physical or mental activity. When the metabolic reserves of the body are exhausted and the waste products increased, as for example after prolonged exertion, the body finds it difficult to continue its function and activity. The accumulation of lactic acid in muscle tissue and the depletion of glycogen (stored glucose) results in muscle fatigue. The contractile properties of muscle are reduced, and continued exertion is impossible unless the muscle is allowed to rest.

See The Columbia Encyclopedia, Sixth Edition. Copyright © 2006, Columbia University Press, *available at* <http://education.yahoo.com/reference/encyclopedia/entry/fatigue:ylt=AjhHd3lQ5Fw6rJ9P8oEgl1NSt8wF>.

It is clear from the definitions above that leg cramps and CFS are quite different from muscular fatigue. Accordingly, Suzuki’s suggestion to use proanthocyanidin to treat CFS would not have suggested a method of reducing muscular fatigue by administering proanthocyanidin, as presently claimed. Because the cited art does not teach or suggest every element of the claims, the Office has not made a proper *prima facie* case of obviousness, and this aspect of the rejection should be withdrawn.

Further, in the presently claimed invention, “lactic acid buildup upon physical exercise is reduced.” Proanthocyanidin advantageously suppresses the rise in lactic acid value upon physical exercise, making continuous and effective physical exercise easy. Especially when new physical exercise is started, the load to muscle tissues suddenly increases locally, causing the feeling of fatigue to increase. The feeling of fatigue is apt to

disturb the continued physical exercise. *See, e.g.*, Specification, page 7, lines 13-19; page 17, lines 11-20; page 18, lines 1-7. Suzuki neither teaches nor suggests this advantage. For this, too, the rejection should be withdrawn.

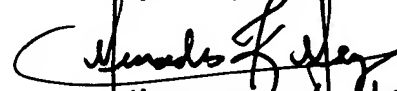
### CONCLUSION

Should the Examiner have any questions or comments regarding Applicants' amendments or response, he is asked to contact Applicants' undersigned representative at the telephone number shown below. Please direct all correspondence to the below-listed address.

In the event that the Office believes that there are fees outstanding in the above-referenced matter and for purposes of maintaining pendency of the application, the Office is authorized to charge the outstanding fees to Deposit Account No. 50-0573. The Office is likewise authorized to credit any overpayment to the same Deposit Account Number.

Date: September 18, 2007

Respectfully submitted,



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Application No.: 10/561,171  
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## **Exhibit 1**

[http://en.wikipedia.org/wiki/Cramp#Nocturnal Leg Cramps](http://en.wikipedia.org/wiki/Cramp#Nocturnal_Leg_Cramps)

## Cramp

From Wikipedia, the free encyclopedia

Jump to: [navigation](#), [search](#)

*This article is about muscular pain. For the band, see [the Cramps](#). For the tool, see [Clamp \(tool\)](#).*

Cramps are unpleasant, often painful sensations caused by contraction or over shortening, usually of [muscles](#). Cramps can be caused by cold or overexertion. Illness or poisoning can also cause cramps, particularly in the [stomach](#), which is referred to as [colic](#) if it fits particular characteristics. See also [Delayed onset muscle soreness](#).

### Nocturnal Leg Cramps

[Nocturnal](#) leg cramps are involuntary muscle contractions that occur in the [calves](#), [soles of the feet](#) or other muscles in the body during the night or (less commonly) while resting. The duration of nocturnal leg cramps is highly variable with cramps sometimes only lasting a few seconds and other times several minutes. Soreness in the muscles may remain for some time after the cramp ends. These cramps are more common in older populations but may happen to anyone. They can happen quite frequently in teenagers and in some cases while exercising at night. Nocturnal leg cramps can be very painful especially if dehydrated.

The precise cause of these cramps is unclear. Potential contributing factors are believed to include low levels of certain minerals ([magnesium](#), [potassium](#), [calcium](#) and [sodium](#)), [dehydration](#) and prolonged sitting. Less common causes include more serious conditions or use of drugs.

Nocturnal leg cramps may be relieved quickly by stretching the affected leg straight out and pointing the toes upward. People report that quickly standing up and walking a few steps may also shorten the duration of a cramp.

An unrelated condition is [restless legs syndrome](#), an unpleasant sensation that is relieved by moving the leg, but which rarely includes cramping or pain.

[http://en.wikipedia.org/wiki/Chronic\\_fatigue\\_syndrome](http://en.wikipedia.org/wiki/Chronic_fatigue_syndrome)

Chronic fatigue syndrome (CFS) is one of several names given to a poorly understood, highly debilitating disorder of uncertain cause, which is thought to affect approximately 4 per 1,000 adults<sup>[1]</sup> in the United States and other countries, and a smaller fraction of children.<sup>[2]</sup>

The disorder is marked by severe, chronic mental and physical exhaustion and by other specific symptoms, arising in previously healthy and active persons. Despite promising avenues of research, there remains no objective assay or pathological finding which is widely accepted to be diagnostic of CFS. It remains largely a diagnosis of exclusion, made on the basis of patient history and symptomatic criteria, although a number of tests exist which can help aid diagnosis.<sup>[3]</sup> Although there is agreement on the genuine threat to health, happiness, and productivity posed by CFS, various physicians' groups, researchers, and patient activists champion very different nomenclature, diagnostic criteria, etiologic hypotheses, and favored treatments, resulting in ongoing controversy about nearly all aspects of the disorder. The name *chronic fatigue syndrome* is itself controversial, with some patient advocates and other authorities preferring terms such as Myalgic Encephalomyelitis ("ME" or "ME/CFS") and post-viral fatigue syndrome ("PVFS"), which imply specific underlying etiologies or pathologic processes.<sup>[4]</sup>

CFS is not the same as "chronic fatigue" – while fatigue as a symptom is very common, CFS itself is relatively rare by comparison.<sup>[5]</sup> Definitions (other than the 1991 UK Oxford criteria<sup>[6]</sup>) require a number of features, the most common being severe mental and physical exhaustion which is "unrelieved by rest" (according to the 1994 Fukuda definition),<sup>[7]</sup> and may be worsened by even trivial exertion (a mandatory diagnostic criterion according to some systems). Most diagnostic criteria insist that the symptoms must be present for at least six months, and all insist on there being no other cause for them: i.e. the symptoms must be idiopathic, not caused by other medical conditions such as diabetes, hypothyroidism or anemia. CFS patients may report many other symptoms which are not included in all diagnostic criteria, including muscle weakness, cognitive dysfunction, hypersensitivity, orthostatic intolerance, digestive disturbances, depression, poor immune response, and cardiac and



respiratory problems. It is unclear if these symptoms represent co-morbid conditions or are produced by the same underlying etiology as CFS itself.<sup>[8]</sup> Some cases improve over time, and treatments (though none are universally accepted) bring a degree of improvement to many others, though resolution is rare.

CFS occurs more often, but not exclusively, in women, for unknown reasons. CFS is most easily diagnosed when formerly active adults become ill, and is most commonly diagnosed in young to middle aged adults, although it is also reported in adolescents and the elderly.<sup>[9]</sup>

[http://en.wikipedia.org/wiki/Fatigue\\_%28medical%29#Physical\\_fatigue](http://en.wikipedia.org/wiki/Fatigue_%28medical%29#Physical_fatigue)

## Physical fatigue

*Main article: Muscle weakness*

Physical fatigue or muscle weakness (or "lack of strength") is a direct term for the inability to exert force with ones muscles to the degree that would be expected given the individual's general physical fitness. A test of strength is often used during a diagnosis of a muscular disorder before the etiology can be identified. Such etiology depends on the type of muscle weakness, which can be true or perceived as well as central or peripheral. True weakness is substantial, while perceived rather is a sensation of having to put more effort to do the same task. On the other hand, central muscle weakness is an overall exhaustion of the whole body, while peripheral weakness is an exhaustion of individual muscles.

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## Encyclopedia: chronic fatigue syndrome

[http://education.yahoo.com/reference/encyclopedia/entry/chronic;vlt=Ah\\_dTRSC9Abx5\\_uEC7JWoG0ZvskF](http://education.yahoo.com/reference/encyclopedia/entry/chronic;vlt=Ah_dTRSC9Abx5_uEC7JWoG0ZvskF)

(CFS), collection of persistent, debilitating symptoms, the most notable of which is severe, lasting fatigue. In other countries it is known variously as myalgic encephalomyelitis, chronic fatigue and immune dysfunction syndrome, and postviral fatigue syndrome. It was first recognized as a syndrome in the 1860s by Dr. George Beard, who called it neurasthenia. He believed it to be a neurosis with a fatigue component. Definitions and theories of its cause have changed over the years; many cases have been misdiagnosed as imaginary because doctors could find no cause. In the mid-1980s it came to the public's attention, as affluent women in their thirties began to seek treatment. (For unknown reasons, more women than men seek treatment for the disease.)

### Symptoms and Identification

As currently defined, chronic fatigue syndrome is the presence of severe, disabling fatigue lasting for six or more consecutive months. The fatigue is persistent or relapsing, and is new (i.e., not lifelong), not relieved by rest, not the result of ongoing exertion, and interferes with normal work, social, educational, or personal activities. Diagnosis also requires at least four of the following symptoms, each persistent or recurring and not present before the fatigue: impairment of short-term memory or concentration, sore throat, tender lymph nodes in the neck or axillary region, muscle pain, joint pain, headaches peculiar to the syndrome, unrefreshing sleep, and malaise of more than one day's duration following exertion. Chronic fatigue that does not meet all these criteria is termed "idiopathic fatigue."

The course of the disease varies. Many people first experience symptoms after a cold or bout of the flu. Most people reach a plateau early on; the symptoms come and go with varying severity afterward. Some experience complete remission; others have their symptoms indefinitely.

There are no specific diagnostic tests. Diagnosis must first rule out known causes of fatigue such as hypothyroidism, cancer, multiple sclerosis, and major depression with psychotic or melancholic features (e.g., schizophrenia, bipolar disorder). Chronic fatigue syndrome and nonpsychotic, nonmelancholic depression, however, are not mutually exclusive. Substance abuse and side effects of prescribed medications must also be eliminated as possible causes.

### Cause and Treatment

There is no known single cause of CFS. Some authorities believe it is a condition shared by many different underlying diseases rather than an entity unto itself; others believe it is caused by a defect of the immune system. Hormonal deficits, low blood pressure, and viral infections have been studied as possible causes or contributors. The postulated causal link with Epstein-Barr virus hypothesized in the mid-1980s has been discounted.

There is no definitive treatment for CFS, although success has been reported anecdotally with antidepressants, antianxiety medications, antivirals, and immune boosters. Symptomatic treatment for the muscle and joint pains is helpful in some cases. Counseling and peer support groups help some patients cope with the frustrating nature of the disease.

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**Encyclopedia: fatigue, in physiology**

<http://education.yahoo.com/reference/encyclopedia/entry/fatigue; vlt=AjhHd3lQ5Fw6rJ9P8oEgl1NSt8wF>

in physiology, inability to perform reasonable and necessary physical or mental activity. When the metabolic reserves of the body are exhausted and the waste products increased, as for example after prolonged exertion, the body finds it difficult to continue its function and activity. The accumulation of lactic acid in muscle tissue and the depletion of glycogen (stored glucose) results in muscle fatigue. The contractile properties of muscle are reduced, and continued exertion is impossible unless the muscle is allowed to rest. In the normal body a period of rest permits redistribution of nutritive elements to the muscles and tissues and elimination of accumulated waste products; the body is then ready to resume activity. There are some persons in whom fatigue is a chronic state that does not necessarily result from activity or exertion. In some instances this abnormal fatigue may be associated with systemic disorders such as anemia, a deficiency of protein or oxygen in the blood, addiction to drugs, increased or decreased function of the endocrine glands, or kidney disease in which there is a large accumulation of waste products. If excessive fatigue occurs over a prolonged period, exhaustion (marked loss of vital and nervous power) may result. In most persons with chronic fatigue, however, the condition seems to be associated with bipolar disorder. Thorough medical and psychiatric examination may be required.

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**Encyclopedia: cramp**

[http://education.yahoo.com/reference/encyclopedia/entry/cramp;\\_ylt=AqTMSrlxIxr9MWUx9KMCagVSt8wF](http://education.yahoo.com/reference/encyclopedia/entry/cramp;_ylt=AqTMSrlxIxr9MWUx9KMCagVSt8wF)

painful uncontrollable contraction of a muscle or group of muscles. The type that results from cold, strain, or disturbance of circulation (as experienced by swimmers) is eased by massage and the application of heat. Cramp in the abdominal or skeletal muscles brought on by hard physical exertion in extremely high temperatures (e.g., in miners, stokers, or firemen) because of loss of salt from the body during profuse perspiration can last for hours or days if untreated. Such cramps are considered to be a type of heat exhaustion. A cool atmosphere and the replacement of salt and water orally or intravenously is required, and application of heat is not recommended. Heat cramps in persons who do heavy labor can be prevented by the addition of salt to drinking water or by taking salt tablets. Contraction of muscles in a hollow organ is known as colic. A stitch in the side is due to a cramp in the muscles between the ribs